

Instruction for operating EOS

(updated 2014-09-29)

1. Login 'Pump Probe' system from the sign-in laptop



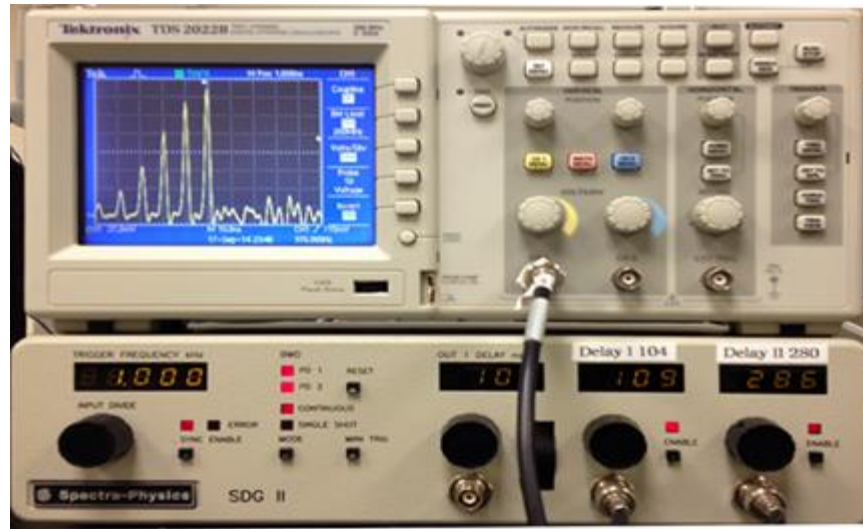
2. Turn on Millennia laser: small chiller on; start Millennia ON-OFF program to get 4.4W power then open the Millennia shutter from the program; mode lock Tsunami



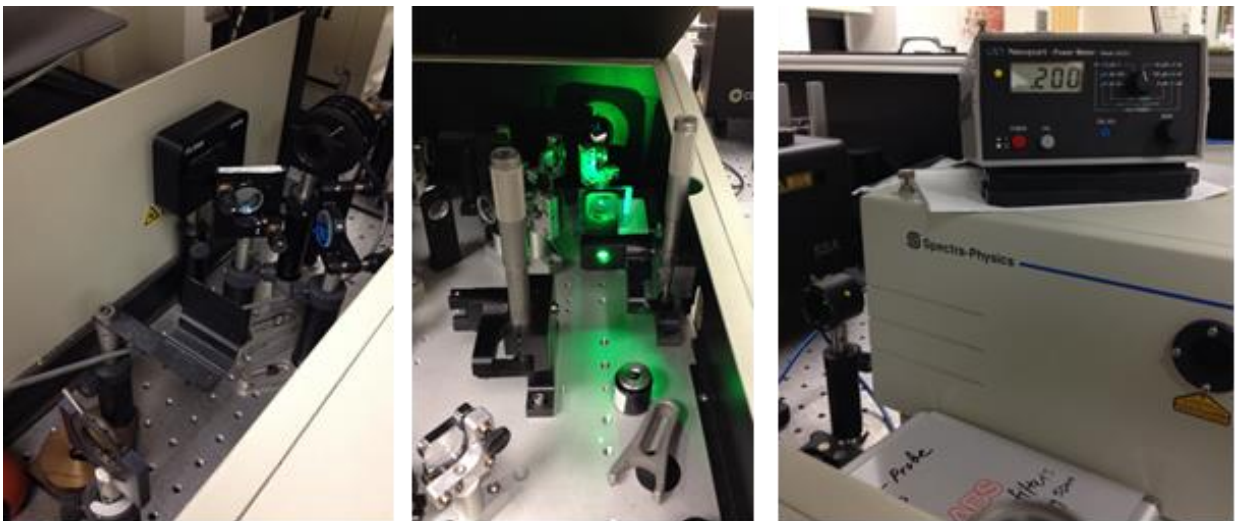
3. Turn on Evolution laser: large chiller on; Evolution Power on; Key Switch on; Evolution power on – hold the mouse on the green button for few seconds till the green lights up



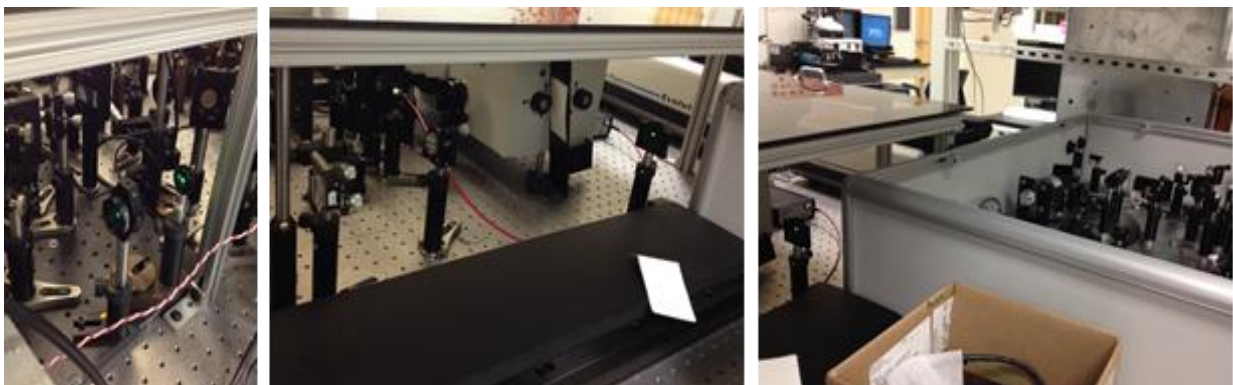
4. **Amplified laser pulses from Spitfire** press the 'reset' button on SDG II; press Delay I ENABLE button to see the entire pulse train; then press Delay II ENABLE button to see part of the pulse train (as shown on oscilloscope)



5. **Align OPA** open Spitfire external shutter; unblock Spitfire beam to OPA; set OPA at the desired wavelength



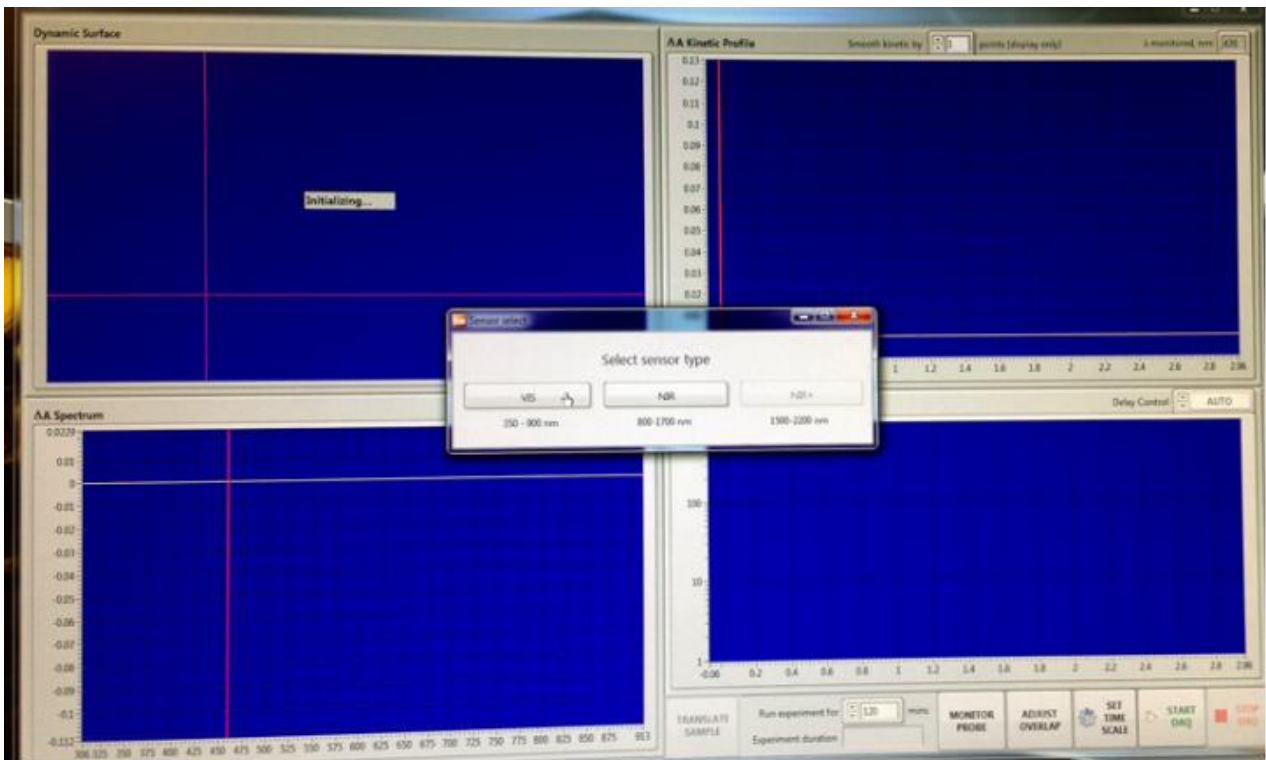
6. **Align excitation beam** use the mirror at OPA exit to guide beam to the first iris; using the 2 folding mirrors to direct the beam through the second iris and the EOS entrance; place a card in EOS to monitor the beam



7. **EOS on** switching on EOS (the top left switch); switch on PC (inside the right door);



8. **Launch EOS program** and select sensor type 'VIS'



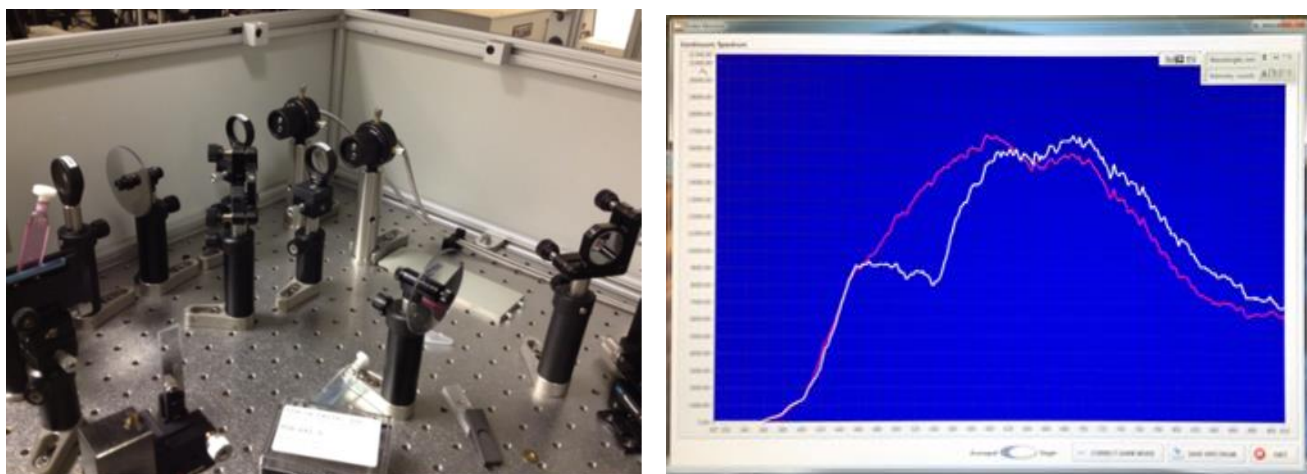
9. **Turn on the EOS laser (Probe light)** key on; press 'LASER ENABLE' button till the 'READY' light is on; LASER START/STOP switch on



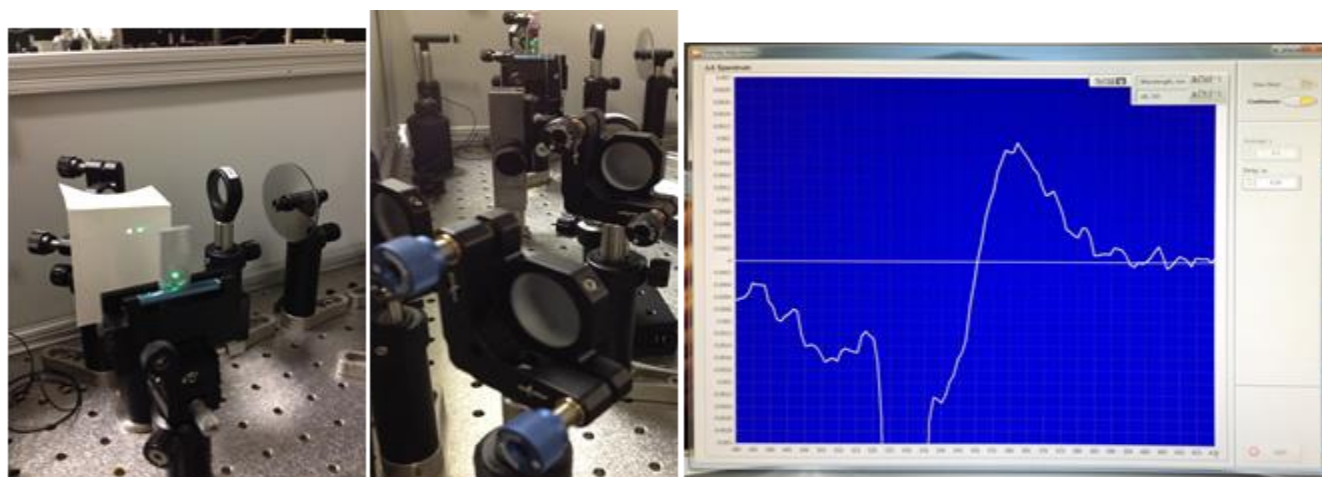
10. **Set probe light** in EOS program, open 'MONITOR PROBE' page; slowly turn the 'POWER KNOB' while monitoring the number in the 'POWER SETPOINT' window, and the spectra (white=probe, red=reference) in the 'MONITOR PROBE' page on screen. !! Keep laser power below 0.860 to prevent laser damage!!



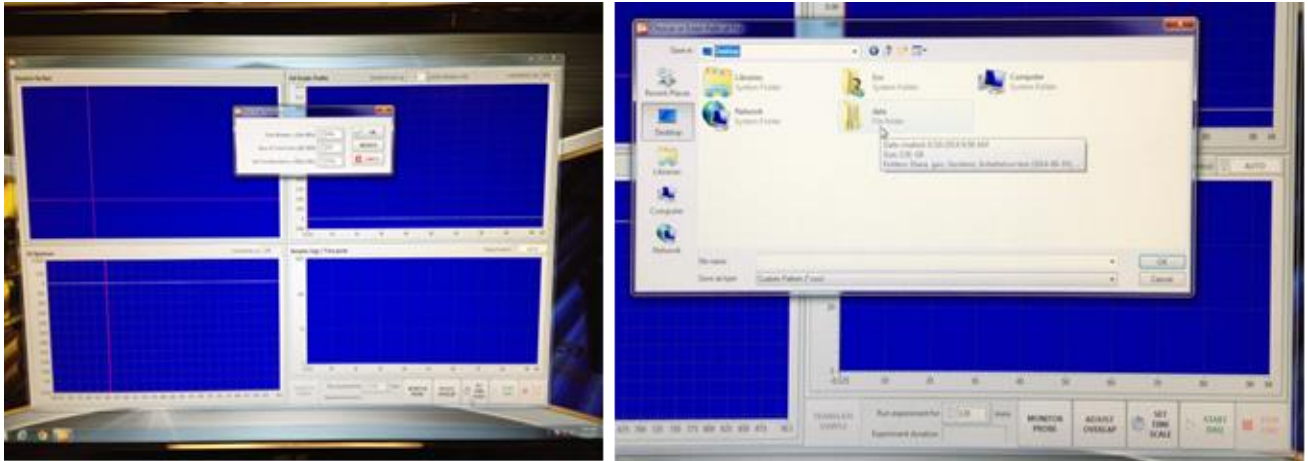
11. **adjust probe and reference beam intensities** detectors saturate at $\sim 20,000$ counts, use 3 NG filters to balance the probe and reference beam intensities and to keep both at $\sim 18,000 - 19,000$ levels



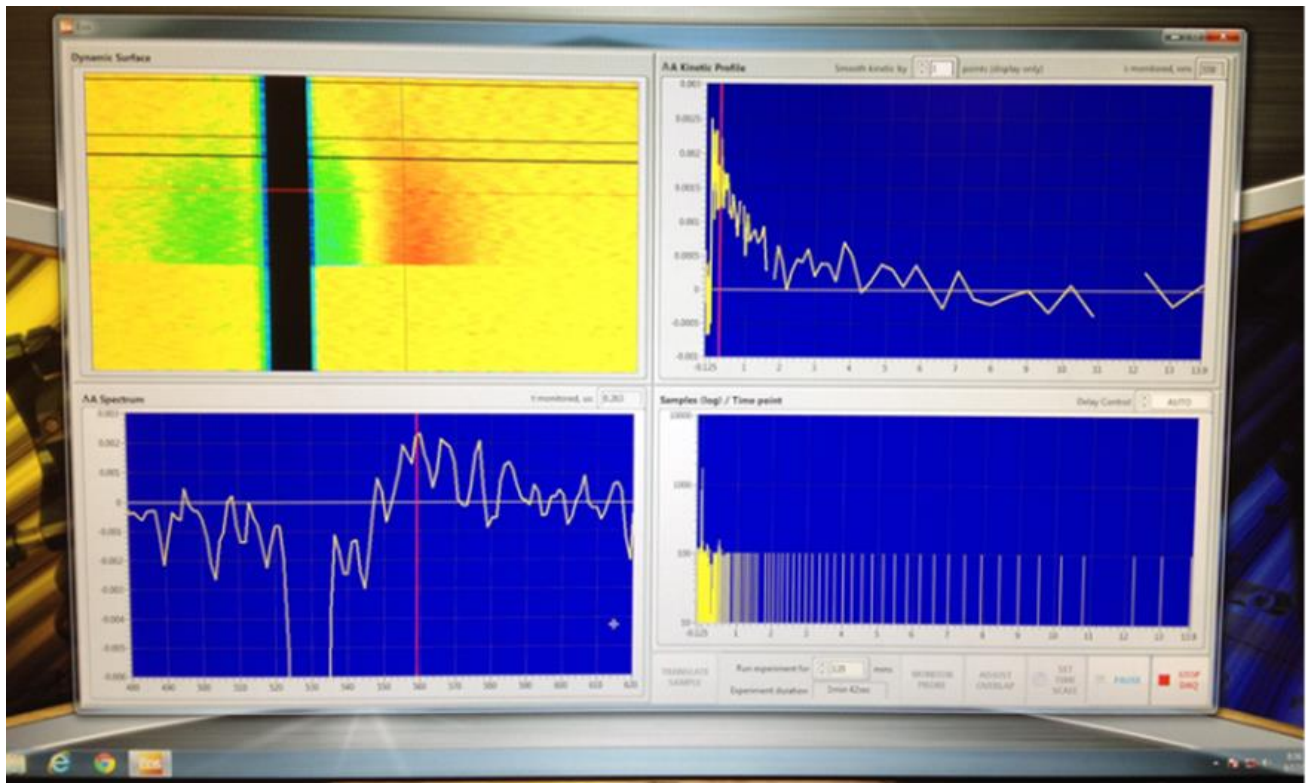
12. **Align pump and probe beams** place alignment tool in sample holder and let the probe beam through the pinhole; adjust pump beam through the pinhole using the mirror with BLUE knobs. There are 2 pieces of alignment tools; the black one has a smaller pinhole (!!keep both of them in the EOS box). Replace the alignment tool with sample, maximize the signal in 'ADJUST OVERLAP' window with appropriate time delay



13. **Data acquisition** set time scale; save data in Desktop\Data\xxx (create ur own directory)



14. **light)** key on



System OFF procedures

1. **Probe laser off:** !! Reduce EOS laser power to zero and switch off the laser before exit EOS program.
2. **Shut down EOS PC** and power off the EOS.
3. **Block Spitfire output:** block the beam to OPA; close the external shutter at Spitfire exit
4. **SDG II:** Delay II off; Delay I off; do NOT touch other buttons and knobs!!
5. **Oscilloscope off:** the switch is on the top-left.
6. **Evolution laser off:** STOP laser from laptop program; key off; power switch off
7. **Big chiller off**
8. **Millennia laser off:** close laser shutter from Millennia ON-OFF program; click on 'Laser OFF' icon and wait till the 'Quit' icon lights up (~ 30 seconds); then click on 'Quit'
9. **Small chiller off**
10. **Log off** from the laptop.

Data Conversion

1. Open EOS file (*.csv) in EXCEL
2. Delete the last 2 columns and the header lines in the last few rows, delete unwanted data in certain wavelength region
3. Copy data and paste transversely in a new sheet
4. 'Find' 'NaN' in the data sheet and replace with numbers
5. Save the data in the Text format (Tab Delimited), this file should be readable by 'CarpetView' program
6. For ASUFIT format, change file extension from '.txt' → '.dat', and the first element from '0' → 'NaN'